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Haruyo Fukui da

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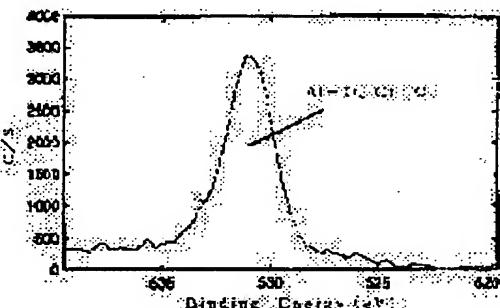
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## (54) HARD COATING

## (57) Abstract:

**PROBLEM TO BE SOLVED:** To provide a hard coating, improving the high-temperature oxidation resisting characteristic, adhesion, and wear resistance of (AlCr)N series coating, and having high hardness.

**SOLUTION:** This hard coating is formed by arc discharge ion plating method. The hard coating is represented by  $(Al_xCr_{1-x-y}Si_yM_z)(N_{1-\alpha-\beta-\gamma}BaC\beta O_y)$ . The hard coating has a diffraction strength on rock salt structure type (200) face by X-ray diffraction, half-power band width thereof is from  $0.5^\circ$  to  $2.0^\circ$  both inclusive, and the hard coating has binding energy of at least Al, Cr, M and/or Si and oxygen in the region of 525eV to 535eV in X-ray photoelectron spectral analysis. The reference signs, x, y, z,  $\alpha$ ,  $\beta$ ,  $\gamma$  respectively designate atomic percentage.  $0.45 < x < 0.85$ ,  $0 \leq y < 0.35$ ,  $0.50 \leq x+y+z < 1.0$ ,  $0 < z < 0.20$ ,  $0 \leq \alpha < 0.15$ ,  $0 \leq \beta < 0.65$ ,  $0 < \gamma < 0.65$ ,  $0 < \alpha+\beta+\gamma \leq 1.0$ , and M is selected from one or two or more kinds of elements among Ca, Mn, Sr, Y, Zr, Ce, Nd, Sm, Tb, Dy, Er and Yb.



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